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HOST SPECIFICITY OF *OCHRIMNUS MIMULUS* (STÅL) (HEMIPTERA: LYGAEIDAE) WITH NOTES ON ITS PHENOLOGY

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Abstract.—*Ochrimnus mimulus,* a seed feeding bug infesting *Baccharis halimifolia* and *B. neglecta,* was studied to determine its host specificity. Laboratory tests indicated that it would oviposit in a wide range of asteraceous inflorescences. When early instar nymphs were placed on inflorescences in a no-choice experiment some individuals fed more than four days on *Solidago altissima* and *Chrysothamnus nauseosus* and one individual was reared through to an adult on *Conyza canadensis.* In the field, nymphs were found in the inflorescences of *S. altissima* at two sites in Texas. It was therefore concluded that *O. mimulus* was not sufficiently specific to introduce into Australia for the biological control of *B. halimifolia.*

Ochrimnus mimulus (Stål) is a small lygaeid bug frequently found in large numbers on the inflorescences of *Baccharis halimifolia* L. and *B. neglecta* Britton (Asteraceae: Astereae). Although it is represented in most major insect collections in the United States, little is known of its host range, biology, or phenology. Blatchley (1926) recorded it from the heads and stems of thistles and Brailovski (1982) listed *B. halimifolia* and *Taxodium distichum* (L.) (Taxodiaceae) as hosts.

The genus *Ochrimnus* Stål is mainly Neotropical and contains 43 species, most of which are associated with the inflorescences of various asteraceous plants (Brailovski, 1982). Adults of some species have been collected on non-asteraceous plants. *Ochrimnus collaris* (Fabricius) has been collected frequently on *Pisonia "albida"* (Wolcott, 1936, 1941; Ramos, 1946). *Zea mays* L. has been suggested as a possible host for *O. pallescens* (Stål) (Gibson and Carillo, 1959). Nymphs of *O. pallescens* and *O. pallidoctocinctus* (Stål) have been collected on plants from more than one tribe of the Asteraceae (Brailovski, 1982). Six species have been recorded from *Baccharis* spp. Five associations recorded by Brailovski (1982) are: *O. mimulus* from *B. halimifolia*; *O. carnosulus* (Van Duzee) and *O. chontalensis* (Distant) from *B. trinervis* (Lam.); *O. foederatus* (Van Duzee) from *B. sarathroides* Gray and *O. barberi* (Slater) from *B. glandulosa.* More recently, North American Field Station staff have collected *O. lineoloides* (Slater) from *B. braunii* (Polak) in Costa Rica.

The primary purpose of this study was to determine by either field or laboratory studies whether this insect might breed on any non-*Baccharis* plants. A significant indication that it might breed on non-*Baccharis* species would lead to its rejection as a biocontrol agent for *B. halimifolia* which is now a serious noxious weed in

Table 1. Number of eggs deposited by *Ochrimnus mimulus* in inflorescences of various plant species.

Plant	Tribe	Mean No. of Eggs
(1) First Experiment		
Baccharis neglecta Britton	Astereae	43
Conyza canadensis (L.) Cronq.	Astereae	6
Haplopappus tenuisectus (Green) Blake	Astereae	12
Solidago altissima L.	Astereae	24
Isocoma wrightii (Gray) Rydb.	Astereae	1
Gutierrezia microcephala (DC.) Gray	Astereae	0
Helianthus annuus L.	Heliantheae	0
Xanthium strumarium L.	Heliantheae	0
Parthenium hysterophorus L.	Heliantheae	13
Zinnia elegans Jacq.	Heliantheae	0
Lactuca sativa L.	Lactuceae	10
Lantana camara L.	Verbenaceae*	0
(2) Second Experiment		
Baccharis neglecta Britton	Astereae	17
Aster novae-angliae L.	Astereae	0
Grindelia squarrosa (Pursh) Dunal.	Astereae	0
Chrysothamnus nauseosus (Pallas) Britton	Astereae	4
Gymnosperma glutinosum (Spreng.) Less.	Astereae	0
Ambrosia trifida L.	Heliantheae	1
Tagetes lucida Cav.	Tageteae	0
Chrysanthemum moriflorum Ramat.	Anthemideae	0
Artemisia frigida Willd.	Anthemideae	20
Gomphrena globosa L.	Amaranthaceae*	0

* Family.

southeastern Queensland and northeastern New South Wales, Australia, and for which biological control agents are now being sought in North America.

Notes on Distribution, Phenology, and Biology

Ochrimnus mimulus occurs on both *B. halimifolia* and *B. neglecta*. It has been commonly collected from Texas to Florida (Slater and Baranowski, 1978). The following observations were made by inspecting *B. neglecta* in Texas over a three year period. Adults are found on stems almost throughout the year and have even been observed inhabiting old galleries of stemboring insects inside the stem. They are abundant in early spring (April–May) but, when flowering commences in late September, are found in far greater numbers. Mating occurs on the plant and eggs are laid in the female inflorescences. Development of the nymphs coincides with the duration of flowering and seed development so that when the seeds begin to disperse in late autumn, late instar nymphs and newly molted adults are present. Nymphs can also be found in the soil at the base of the plant at that time. Little is known of their biology in winter, spring and summer when *Baccharis* is not in flower although they appear to overwinter as nymphs and adults.

In the laboratory, adults mated readily in cages and appeared to feed on sugar solutions when these were supplied. Dissection of females revealed an average of 14 immature eggs. Eggs were laid among the flowers within the inflorescence.

Table 2. Number of *Ochrimnus mimulus* nymphs surviving after 4 days and the number completing their development after ten early instar nymphs were placed on inflorescences of various plant species.

Plant	Total Number Surviving 4 Days	Total Number Becoming Adults
Baccharis neglecta Britton	3	1
Solidago altissima L.	0	0
Conyza canadensis L.	5	1
Chrysothamnus nauseosus (Pallas) Britton	5	0
Parthenium hysterophorus L.	0	0
Artemisia frigida Willd.	0	0

They were milky white and elongate with average dimensions of 1.2 × 0.3 mm. Nymphs were observed to insert their stylets through the bracts surrounding the flower and were also observed feeding on the bodies of dead *O. mimulus*.

Host Specificity Testing

Oviposition.—Two experiments were conducted to determine the host specificity of oviposition. In each experiment, eleven or twelve bouquets of the inflorescences of different plant species were placed in a 37 × 27 × 17 cm plastic cage together with two sugar water wicks and approximately 20–40 adult unsexed *O. mimulus* which had been collected from *B. neglecta* growing near Temple, Texas. After 8–9 days when most of the insects had died, the inflorescences were carefully dissected and any eggs counted. Each experiment was replicated twice.

Results (Table 1) show that *O. mimulus* oviposited on quite a wide range of plants in this laboratory experiment. They oviposited on a number of species within the Astereae tribe and on *Ambrosia trifida* and *Parthenium hysterophorus* of the Heliantheae, *Artemesia frigida* of the Anthemideae and perhaps more importantly *Lactuca sativa* of the Lactuceae. They did not oviposit on the non-asteraceous species.

Feeding by nymphs.—Early instar nymphs were collected by sweeping *B. neglecta*. Ten nymphs were placed in each of six petri dishes together with an inflorescence of one plant species. These species flower asynchronously so the material used was of varying maturity and, possibly, quality. The plant material was changed every second day.

Results (Table 2) show that after 4 days there were no survivors on plants selected from outside the Astereae tribe but that nymphs survived on species of three genera within that tribe. A number of nymphs continued feeding on *Conyza canadensis* for quite some time and one individual completed its immature development to become an adult after feeding for about a month.

This very small, exploratory experiment should be interpreted as a demonstration that *O. mimulus* can complete its development in the laboratory on a non-*Baccharis* host. As *Ochrimnus* are considered quite difficult to rear in the laboratory (R. Baranowski, pers. comm.), it would not be at all surprising if *O. mimulus* could develop on some of the other plant species used in this test, were techniques to be refined.

Field survey.—Asteraceous plants were closely examined at a number of sites where *Baccharis* was growing. Both adults and nymphs were found on *S. altissima*

at both Lake Stillhouse Hollow, near Temple, and Conroe, Texas, indicating that *O. mimulus* breeds in *Solidago* as well as *Baccharis*. However, as the insect was much less numerous on the *Solidago* than on the *Baccharis* at these sites, it was evident that *Baccharis* is the preferred host.

Discussion

The investigation showed that although *Baccharis* spp. are the principal hosts, *O. mimulus* also breeds in the field on *Solidago altissima*. Laboratory testing indicated that *Conyza canadensis* might also be a possible host. It therefore appears that this insect is stenophagous and confined to various *Asteraceous* species. It might also be possible that *O. mimulus* has an alternate, spring flowering host as Blatchley (1926) recorded both adults and nymphs on thistles in April in Florida.

Unfortunately, because both *S. altissima* and *C. canadensis* have been introduced into Australia from North America, this insect could not be recommended for introduction into Australia even though it is most unlikely that it would damage any economically important species in that continent.

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